

# SEQUENCE LISTING

<110> Commonwealth Scientific and Industrial Research Organisation  
EAST, Peter David

<120> Toxin Genes from the Bacteria *Xenorhabdus nematophilus* and *Photorhabdus luminescens*

<130> 050179-0076

<140> 09/463,048

<141> 2000-01-18

<150> PCT/AU98/00562

<151> 1998-07-17

<150> PO 8088

<151> 1997-07-17

<160> 20

<170> PatentIn version 3.1

<210> 1

<211> 1107

<212> DNA

<213> *Xenorhabdus nematophilus*

<400> 1

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cgtgtactag aattcaagca aacaaatgaa agtcatacag gattgtatgg aattgcatat	180
cgagctaaga aagtaataat agcatatgct tttagcggtaa gtggtattca taatgtctct	240
caacttccag aagactatta taaaaataag gataacacag gtagaattta tcaagaatac	300
atgtctaadc ttttatctgc actattgggt gagaatgggt atcaaatttc taaagatatg	360
gcaaatgatt ttaccagaa cgaactggag tttggaggtc aacgtcttaa aaatacctgg	420
gatattcctg atcttgagaa taaactattg gaagattatt cagatgaaga taaattatta	480
gcactatatt tctttgcttc acaagaactt ccaatggagg caaatcaaca atcaaatgca	540
gcaaattttt ttaaagtaat tgatttttta cttatcttat ctgctgtaac atcactggga	600
aaaaggattt tttcaaaaaa tttttacaat ggtctagaaa ctaaatcatt agagaattat	660
attgagagaa aaaaactttc taaacctttc tttcgaccac cgcagaagtt acctgatggc	720
agaacaggct acttggccgg tccaacaaaa ggcctaaat tgccaacaac gtcttctaca	780
gcaacaacgt ctacagcagc ttcattctaatt tggagagtta gtttgcaaaa acttagagat	840

aacccatcca gaaatacatt tatgaaaatg gatgatgctg caaaacgaaa atatagttca	900
tttataaaaag aggtacaaaa gggtaatgat ccacgtgcag cagcagcaag tattgggtaca	960
aaaagcggca gtaacttcga aaaactgcaa ggtagagatt tatatagtat aagactaagc	1020
caagaacaca gggtaacatt ctccataaat aatactgacc aaataatgga gatccaaagt	1080
gttggaactc attaccaaaa tatataa	1107

<210> 2  
 <211> 1008  
 <212> DNA  
 <213> Photorhabdus luminescens

<400> 2	
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gcaggagata tagtacgtat actaaacttt aagcaaacag atgaggggtca tacagcatca	120
tatggaattg aatatcgagc taagaaaata atattagctt acgctttggc tgtaagtgg	180
attcataatg tatctaaact tctgatgac tattataaga ataaagagac tgctgagaga	240
atztatcaag aatatatgtc taatctttca tctgcactat taggtgaaaa tggatgatcaa	300
atctctaaag atatggcaaa tggtttttat aagaatgaac tggattttga aggtcaatat	360
cctcaaaaca tttggaatgt tctgagctt gaaaataaac cattgagtgc ttattcagat	420
gacgataaat tattagcact atatTTTTTc tctgtacagg aaattccact ggaggaaaat	480
caacaatcaa atgccgcaag atTTTTTaaa ttaattgatt tcttatttac cttatctgct	540
gtaacttcac tgggaaggag gattTTTTTca aaaaactttt acaatggatt agaggctaaa	600
tcattagaga attatattga gagaaaaaaa ctttctaaac ctttctttcg accaccgcag	660
agattacctg atggcagaat aggttatTTTg gctggaccaa cagaagcgcc taaatggaga	720
gtgagtttta aagaacttaa aaataacaaa tctaggaatg gattttctaa tatggaaggg	780
gctgcaaaac aaaagtatag ttcatttata aaagaggtac aaaagggtaa cgctccacag	840
acagcagcga aaagtattgg tacagccagt ggcagtaacc tggaaaaatt gccgaataat	900
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<210> 3  
 <211> 368  
 <212> PRT  
 <213> Xenorhabdus nematophilus

<400> 3

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Asp Asp Arg Val Thr Pro Asp Asp Lys Gly Glu Tyr Gln Pro Val Glu  
20 25 30

Lys Gln Ile Ala Gly Asp Ile Ile Arg Val Leu Glu Phe Lys Gln Thr  
35 40 45

Asn Glu Ser His Thr Gly Leu Tyr Gly Ile Ala Tyr Arg Ala Lys Lys  
50 55 60

Val Ile Ile Ala Tyr Ala Leu Ala Val Ser Gly Ile His Asn Val Ser  
65 70 75 80

Gln Leu Pro Glu Asp Tyr Tyr Lys Asn Lys Asp Asn Thr Gly Arg Ile  
85 90 95

Tyr Gln Glu Tyr Met Ser Asn Leu Leu Ser Ala Leu Leu Gly Glu Asn  
100 105 110

Gly Asp Gln Ile Ser Lys Asp Met Ala Asn Asp Phe Thr Gln Asn Glu  
115 120 125

Leu Glu Phe Gly Gly Gln Arg Leu Lys Asn Thr Trp Asp Ile Pro Asp  
130 135 140

Leu Glu Asn Lys Leu Leu Glu Asp Tyr Ser Asp Glu Asp Lys Leu Leu  
145 150 155 160

Ala Leu Tyr Phe Phe Ala Ser Gln Glu Leu Pro Met Glu Ala Asn Gln  
165 170 175

Gln Ser Asn Ala Ala Asn Phe Phe Lys Val Ile Asp Phe Leu Leu Ile  
180 185 190

Leu Ser Ala Val Thr Ser Leu Gly Lys Arg Ile Phe Ser Lys Asn Phe  
195 200 205

Tyr Asn Gly Leu Glu Thr Lys Ser Leu Glu Asn Tyr Ile Glu Arg Lys  
210 215 220

Lys Leu Ser Lys Pro Phe Phe Arg Pro Pro Gln Lys Leu Pro Asp Gly  
225 230 235 240

Arg Thr Gly Tyr Leu Ala Gly Pro Thr Lys Ala Pro Lys Leu Pro Thr  
245 250 255

Thr Ser Ser Thr Ala Thr Thr Ser Thr Ala Ala Ser Ser Asn Trp Arg  
260 265 270

Val Ser Leu Gln Lys Leu Arg Asp Asn Pro Ser Arg Asn Thr Phe Met  
275 280 285

Lys Met Asp Asp Ala Ala Lys Arg Lys Tyr Ser Ser Phe Ile Lys Glu  
290 295 300

Val Gln Lys Gly Asn Asp Pro Arg Ala Ala Ala Ala Ser Ile Gly Thr  
305 310 315 320

Lys Ser Gly Ser Asn Phe Glu Lys Leu Gln Gly Arg Asp Leu Tyr Ser  
325 330 335

Ile Arg Leu Ser Gln Glu His Arg Val Thr Phe Ser Ile Asn Asn Thr  
340 345 350

Asp Gln Ile Met Glu Ile Gln Ser Val Gly Thr His Tyr Gln Asn Ile  
355 360 365

<210> 4  
<211> 335  
<212> PRT  
<213> Photorhabdus luminescens

<400> 4

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Glu Lys Gln Ile Ala Gly Asp Ile Val Arg Ile Leu Asn Phe Lys Gln  
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Thr Asp Glu Gly His Thr Ala Ser Tyr Gly Ile Glu Tyr Arg Ala Lys  
35 40 45

Lys Ile Ile Leu Ala Tyr Ala Leu Ala Val Ser Gly Ile His Asn Val

50

55

60

Ser Lys Leu Pro Asp Asp Tyr Tyr Lys Asn Lys Glu Thr Ala Glu Arg  
65 70 75 80

Ile Tyr Gln Glu Tyr Met Ser Asn Leu Ser Ser Ala Leu Leu Gly Glu  
85 90 95

Asn Gly Asp Gln Ile Ser Lys Asp Met Ala Asn Gly Phe Tyr Lys Asn  
100 105 110

Glu Leu Asp Phe Glu Gly Gln Tyr Pro Gln Asn Ile Trp Asn Val Pro  
115 120 125

Glu Leu Glu Asn Lys Pro Leu Ser Ala Tyr Ser Asp Asp Asp Lys Leu  
130 135 140

Leu Ala Leu Tyr Phe Phe Ser Val Gln Glu Ile Pro Leu Glu Glu Asn  
145 150 155 160

Gln Gln Ser Asn Ala Ala Arg Phe Phe Lys Leu Ile Asp Phe Leu Phe  
165 170 175

Thr Leu Ser Ala Val Thr Ser Leu Gly Arg Arg Ile Phe Ser Lys Asn  
180 185 190

Phe Tyr Asn Gly Leu Glu Ala Lys Ser Leu Glu Asn Tyr Ile Glu Arg  
195 200 205

Lys Lys Leu Ser Lys Pro Phe Phe Arg Pro Pro Gln Arg Leu Pro Asp  
210 215 220

Gly Arg Ile Gly Tyr Leu Ala Gly Pro Thr Glu Ala Pro Lys Trp Arg  
225 230 235 240

Val Ser Phe Lys Glu Leu Lys Asn Asn Lys Ser Arg Asn Gly Phe Ser  
245 250 255

Asn Met Glu Gly Ala Ala Lys Gln Lys Tyr Ser Ser Phe Ile Lys Glu  
260 265 270

Val Gln Lys Gly Asn Ala Pro Gln Thr Ala Ala Lys Ser Ile Gly Thr  
275 280 285

Ala Ser Gly Ser Asn Leu Glu Lys Leu Pro Asn Asn Leu Tyr Ser Val  
 290 300

Arg Leu Ser Gln Lys Asp Arg Val Thr Phe Thr Gln Asn Asp Thr Asp  
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Asn Thr Met Thr Val His Ser Val Gly Thr His Tyr Lys Asn Ile  
 325 330 335

<210> 5  
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 <212> DNA  
 <213> Xenorhabdus nematophilus

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 agcgggagat ataatacgtg tactagaatt caagcaaaca aatgaaagtc atacaggatt 180  
 gtatggaatt gcatatcgag ctaagaaagt aataatagca tatgcttttag cggtaagtgg 240  
 tattcataat gtctctcaac ttccagaaga ctattataaa aataaggata acacaggtag 300  
 aatttatcaa gaatacatgt ctaatctttt atctgcacta ttgggtgaga atgggtgatca 360  
 aattttctaaa gatatggcaa atgattttac ccagaacgaa ctggagtttg gaggtcaacg 420  
 tcttaaaaat acctgggata ttctgatct tgagaataaa ctattggaag attattcaga 480  
 tgaagataaa ttattagcac tatatttctt tgcttcacaa gaacttccaa tggaggcaaa 540  
 tcaacaatca aatgcagcaa attttttttaa agtaattgat tttttactta tcttatctgc 600  
 tgtaacatca ctgggaaaaa ggattttttc aaaaaatttt tacaatggtc tagaaactaa 660  
 atcattagag aattatattg agagaaaaaa acttttctaaa cttttctttc gaccaccgca 720  
 gaagttacct gatggcagaa caggctactt ggccgggtcca acaaaagcgc ctaaattgcc 780  
 aacaacgtct tctacagcaa caacgtctac agcagcttca tctaattgga gagttagttt 840  
 gcaaaaactt agagataacc catccagaaa tacatttatg aaaatggatg atgctgcaaa 900  
 acgaaaatat agttcattta taaaagaggt acaaaagggt aatgatccac gtgcagcagc 960  
 agcaagtatt ggtacaaaaa gcggcagtaa cttcgaaaaa ctgcaaggta gagatttata 1020  
 tagtataaga ctaagccaag aacacagggt aacattctcc ataaataata ctgaccaaatt 1080  
 aatggagatc caaagtgttg gaactcatta ccaaaatata taacctgatt tatagtagtg 1140

ataagacgta agataaatat ggaaggttgt aattctattg cacttcctca gaggtgaccg 1200  
ctcag 1205

<210> 6  
<211> 1388  
<212> PRT  
<213> Photorhabdus luminescens

<400> 6

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Cys Thr Thr Gly Cys Gly Thr Ala Ala Gly Thr Thr Ala Ala Thr Thr  
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Thr Thr Ala Cys Ala Thr Thr Gly Ala Ala Ala Thr Thr Ala Ala Cys  
35 40 45

Gly Cys Thr Thr Ala Ala Ala Ala Ala Gly Cys Cys Ala Gly Gly Gly  
50 55 60

Ala Ala Ala Ala Cys Thr Cys Thr Ala Thr Ala Thr Thr Ala Ala  
65 70 75 80

Ala Gly Thr Thr Gly Ala Ala Ala Thr Thr Thr Ala Thr Ala Thr Thr  
85 90 95

Ala Gly Thr Ala Gly Cys Gly Ala Cys Ala Ala Ala Thr Thr Gly Cys  
100 105 110

Gly Gly Ala Gly Thr Thr Thr Thr Cys Thr Gly Cys Cys Ala Gly Ala  
115 120 125

Ala Ala Thr Thr Thr Cys Ala Thr Ala Gly Cys Thr Cys Ala Ala Ala  
130 135 140

Thr Ala Ala Ala Cys Ala Thr Thr Ala Ala Cys Ala Thr Ala Ala Thr  
145 150 155 160

Gly Gly Ala Gly Ala Ala Ala Thr Ala Thr Ala Ala Thr Gly Gly Thr  
165 170 175

Thr Ala Thr Ala Cys Ala Ala Thr Thr Ala Ala Cys Ala Cys Cys Thr  
180 185 190

Gly Ala Thr Gly Ala Thr Ala Gly Ala Ala Gly Thr Gly Gly Ala Thr  
195 200 205

Ala Thr Cys Cys Ala Cys Cys Cys Gly Thr Thr Gly Ala Ala Ala Ala  
210 215 220

Gly Cys Ala Ala Ala Thr Ala Gly Cys Ala Gly Gly Ala Gly Ala Thr  
225 230 235 240

Ala Thr Ala Gly Thr Ala Cys Gly Thr Ala Thr Ala Cys Thr Ala Ala  
245 250 255

Ala Cys Thr Thr Thr Ala Ala Gly Cys Ala Ala Ala Cys Ala Gly Ala  
260 265 270

Thr Gly Ala Gly Gly Gly Thr Cys Ala Thr Ala Cys Ala Gly Cys Ala  
275 280 285

Thr Cys Ala Thr Ala Thr Gly Gly Ala Ala Thr Thr Gly Ala Ala Thr  
290 295 300

Ala Thr Cys Gly Ala Gly Cys Thr Ala Ala Gly Ala Ala Ala Ala Thr  
305 310 315 320

Ala Ala Thr Ala Thr Thr Ala Gly Cys Thr Thr Ala Cys Gly Cys Thr  
325 330 335

Thr Thr Gly Gly Cys Thr Gly Thr Ala Ala Gly Thr Gly Gly Thr Ala  
340 345 350

Thr Thr Cys Ala Thr Ala Ala Thr Gly Thr Ala Thr Cys Thr Ala Ala  
355 360 365

Ala Cys Thr Thr Cys Cys Thr Gly Ala Thr Gly Ala Cys Thr Ala Thr  
370 375 380

Thr Ala Thr Ala Ala Gly Ala Ala Thr Ala Ala Ala Gly Ala Gly Ala  
385 390 395 400

Cys Thr Gly Cys Thr Gly Ala Gly Ala Gly Ala Ala Thr Thr Thr Ala



405

410

415

Thr Cys Ala Ala Gly Ala Ala Thr Ala Thr Ala Thr Gly Thr Cys Thr  
 420 425 430

Ala Ala Thr Cys Thr Thr Thr Cys Ala Thr Cys Thr Gly Cys Ala Cys  
 435 440 445

Thr Ala Thr Thr Ala Gly Gly Thr Gly Ala Ala Ala Ala Thr Gly Gly  
 450 455 460

Thr Gly Ala Thr Cys Ala Ala Ala Thr Thr Thr Cys Thr Ala Ala Ala  
 465 470 475 480

Gly Ala Thr Ala Thr Gly Gly Cys Ala Ala Ala Thr Gly Gly Thr Thr  
 485 490 495

Thr Thr Thr Ala Thr Ala Ala Gly Ala Ala Thr Gly Ala Ala Cys Thr  
 500 505 510

Gly Gly Ala Thr Thr Thr Thr Gly Ala Ala Gly Gly Thr Cys Ala Ala  
 515 520 525

Thr Ala Thr Cys Cys Thr Cys Ala Ala Ala Ala Cys Ala Thr Thr Thr  
 530 535 540

Gly Gly Ala Ala Thr Gly Thr Thr Cys Cys Thr Gly Ala Gly Cys Thr  
 545 550 555 560

Thr Gly Ala Ala Ala Ala Thr Ala Ala Ala Cys Cys Ala Thr Thr Gly  
 565 570 575

Ala Gly Thr Gly Cys Thr Thr Ala Thr Thr Cys Ala Gly Ala Thr Gly  
 580 585 590

Ala Cys Gly Ala Thr Ala Ala Ala Thr Thr Ala Thr Thr Ala Gly Cys  
 595 600 605

Ala Cys Thr Ala Thr Ala Thr Thr Thr Thr Thr Cys Thr Cys Thr  
 610 615 620

Gly Thr Ala Cys Ala Gly Gly Ala Ala Ala Thr Thr Cys Cys Ala Cys  
 625 630 635 640

Thr Gly Gly Ala Gly Gly Ala Ala Ala Thr Cys Ala Ala Cys Ala  
645 650 655

Ala Thr Cys Ala Ala Ala Thr Gly Cys Cys Gly Cys Ala Ala Gly Ala  
660 665 670

Thr Thr Thr Thr Thr Thr Ala Ala Ala Thr Thr Ala Ala Thr Thr Gly  
675 680 685

Ala Thr Thr Thr Cys Thr Thr Ala Thr Thr Thr Ala Cys Cys Thr Thr  
690 695 700

Ala Thr Cys Thr Gly Cys Thr Gly Thr Ala Ala Cys Thr Thr Cys Ala  
705 710 715 720

Cys Thr Gly Gly Gly Ala Ala Gly Gly Ala Gly Gly Ala Thr Thr Thr  
725 730 735

Thr Thr Thr Cys Ala Ala Ala Ala Ala Ala Cys Thr Thr Thr Thr Ala  
740 745 750

Cys Ala Ala Thr Gly Gly Ala Thr Thr Ala Gly Ala Gly Gly Cys Thr  
755 760 765

Ala Ala Ala Thr Cys Ala Thr Thr Ala Gly Ala Gly Ala Ala Thr Thr  
770 775 780

Ala Thr Ala Thr Thr Gly Ala Gly Ala Gly Ala Ala Ala Ala Ala Ala  
785 790 795 800

Ala Cys Thr Thr Thr Cys Thr Ala Ala Ala Cys Cys Thr Thr Thr Cys  
805 810 815

Thr Thr Thr Cys Gly Ala Cys Cys Ala Cys Cys Gly Cys Ala Gly Ala  
820 825 830

Gly Ala Thr Thr Ala Cys Cys Thr Gly Ala Thr Gly Gly Cys Ala Gly  
835 840 845

Ala Ala Thr Ala Gly Gly Thr Thr Ala Thr Thr Thr Gly Gly Cys Thr  
850 855 860

Gly Gly Ala Cys Cys Ala Ala Cys Ala Gly Ala Ala Gly Cys Gly Cys  
865 870 875 880

Cys Thr Ala Ala Ala Thr Gly Gly Ala Gly Ala Gly Thr Gly Ala Gly  
885 890 895

Thr Thr Thr Thr Ala Ala Ala Gly Ala Ala Cys Thr Thr Ala Ala Ala  
900 905 910

Ala Ala Thr Ala Ala Cys Ala Ala Ala Thr Cys Thr Ala Gly Gly Ala  
915 920 925

Ala Thr Gly Gly Ala Thr Thr Thr Thr Cys Thr Ala Ala Thr Ala Thr  
930 935 940

Gly Gly Ala Ala Gly Gly Gly Gly Cys Thr Gly Cys Ala Ala Ala Ala  
945 950 955 960

Cys Ala Ala Ala Ala Gly Thr Ala Thr Ala Gly Thr Thr Cys Ala Thr  
965 970 975

Thr Thr Ala Thr Ala Ala Ala Ala Gly Ala Gly Gly Thr Ala Cys Ala  
980 985 990

Ala Ala Ala Gly Gly Gly Thr Ala Ala Cys Gly Cys Thr Cys Cys Ala  
995 1000 1005

Cys Ala Gly Ala Cys Ala Gly Cys Ala Gly Cys Gly Ala Ala Ala  
1010 1015 1020

Ala Gly Thr Ala Thr Thr Gly Gly Thr Ala Cys Ala Gly Cys Cys  
1025 1030 1035

Ala Gly Thr Gly Gly Cys Ala Gly Thr Ala Ala Cys Cys Thr Gly  
1040 1045 1050

Gly Ala Ala Ala Ala Ala Thr Thr Gly Cys Cys Gly Ala Ala Thr  
1055 1060 1065

Ala Ala Thr Thr Thr Ala Thr Ala Thr Ala Gly Thr Gly Thr Gly  
1070 1075 1080

Ala Gly Gly Cys Thr Ala Ala Gly Cys Cys Ala Ala Ala Ala Ala  
1085 1090 1095

Gly Ala Cys Ala Gly Gly Gly Thr Ala Ala Cys Cys Thr Thr Thr  
1100 1105 1110

Ala Cys Thr Cys Ala Ala Ala Ala Thr Gly Ala Thr Ala Cys Thr  
1115 1120 1125

Gly Ala Cys Ala Ala Thr Ala Cys Ala Ala Thr Gly Ala Cys Gly  
1130 1135 1140

Gly Thr Thr Cys Ala Thr Ala Gly Thr Gly Thr Thr Gly Gly Ala  
1145 1150 1155

Ala Cys Thr Cys Ala Thr Thr Ala Thr Ala Ala Ala Ala Ala Thr  
1160 1165 1170

Ala Thr Ala Thr Gly Ala Thr Gly Ala Gly Thr Ala Ala Thr Cys  
1175 1180 1185

Thr Cys Thr Gly Ala Cys Thr Thr Cys Gly Ala Thr Thr Gly Ala  
1190 1195 1200

Cys Ala Gly Ala Gly Cys Ala Thr Thr Thr Thr Thr Ala Ala Gly  
1205 1210 1215

Cys Thr Cys Thr Cys Ala Thr Thr Thr Thr Cys Thr Cys Ala Ala  
1220 1225 1230

Cys Gly Gly Gly Ala Gly Thr Cys Thr Cys Ala Thr Ala Ala Gly  
1235 1240 1245

Gly Cys Gly Thr Thr Thr Thr Ala Cys Thr Thr Thr Thr Cys Ala  
1250 1255 1260

Ala Gly Cys Cys Ala Cys Thr Ala Thr Gly Thr Gly Gly Thr Cys  
1265 1270 1275

Thr Gly Thr Gly Ala Thr Ala Ala Thr Thr Gly Thr Ala Ala Ala  
1280 1285 1290

Ala Cys Gly Cys Cys Thr Thr Cys Thr Thr Thr Thr Ala Gly Cys

1295                      1300                      1305  
 Cys Ala Ala Thr Ala Cys Ala Cys Thr Thr Thr Ala Cys Thr Ala  
     1310                      1315                      1320  
 Cys Cys Ala Ala Gly Ala Ala Ala Ala Thr Ala Thr Ala Thr Ala  
     1325                      1330                      1335  
 Cys Cys Cys Thr Ala Thr Gly Gly Ala Thr Thr Thr Cys Ala Ala  
     1340                      1345                      1350  
 Gly Ala Thr Gly Gly Ala Thr Cys Gly Cys Gly Gly Cys Gly Gly  
     1355                      1360                      1365  
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     1370                      1375                      1380  
 Cys Cys Gly Gly Gly  
     1385

<210> 7  
 <211> 21  
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 <213> Artificial Sequence

<220>  
 <223> Derived from X. nematophilus

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21

<210> 8  
 <211> 21  
 <212> DNA  
 <213> Artificial Sequence

<220>  
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<400> 8  
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<210> 9  
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 <212> DNA  
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<400> 9

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<210> 10

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21

<210> 11

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<223> Derived from X. nematophilus

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21

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<212> DNA

<213> Artificial Sequence

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<223> Derived from X. nematophilus

<400> 12

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<210> 13

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Derived from P. luminescens

<400> 13

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<210> 14

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Derived from *P. luminescens*

<400> 14

20

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<210> 15

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Derived from *P. luminescens*

<400> 15

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gcagtagact tattcgtgag

<210> 16

<211> 20

<212> DNA

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<223> Derived from *P. luminescens*

<400> 16

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<210> 17

<211> 20

<212> DNA

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<220>

<223> Derived from *P. luminescens*

<400> 17

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gtaaattccgc gaagacaacc

<210> 18

<211> 20

<212> DNA

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<223> Derived from *P. luminescens*

<400> 18

20

tgacggttca tagtggtgga

<210> 19  
<211> 20  
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<220>  
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<400> 19  
aggttgtgat acttggcagt 20

<210> 20  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Derived from *P. luminescens*

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ccatcatttc acataaccga 20